

**Claims**

We claim:

1. A method for configuring a node in a graphical program, the method  
5 comprising:

displaying the node in the graphical program;

receiving user input specifying configuration information for the node;

programmatically creating and displaying one or more input terminals and one or  
more output terminals for the node, based on the configuration information;

10 performing at least one of:

connecting an input terminal of the node to a data source in the graphical  
program, in response to user input;

connecting an output terminal of the node to a data target in the graphical  
program, in response to user input.

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2. The method of claim 1,

wherein a first plurality of possible input terminals is associated with the node;

wherein a second plurality of possible output terminals is associated with the  
node;

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wherein said creating and displaying one or more input terminals for the node  
comprises creating and displaying only a subset of the first plurality of possible input  
terminals;

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wherein said creating and displaying one or more output terminals for the node  
comprises creating and displaying only a subset of the second plurality of possible output  
terminals.

3. The method of claim 1,

wherein said receiving user input specifying the configuration information  
comprises receiving user input specifying:

one or more input terminals from a set of possible input terminals; and  
one or more output terminals from a set of possible output terminals;  
wherein said programmatically creating and displaying one or more input  
terminals and one or more output terminals for the node comprises programmatically  
5 creating and displaying the one or more input terminals and the one or more output  
terminals specified by the user input.

4. The method of claim 1, further comprising:  
automatically determining the one or more input terminals and the one or more  
10 output terminals for the node, based on the configuration information;  
wherein said automatically determining the one or more input terminals for the  
node comprises automatically selecting the one or more input terminals from a set of  
possible input terminals;  
wherein said automatically determining the one or more output terminals for the  
15 node comprises automatically selecting the one or more output terminals from a set of  
possible output terminals.

5. The method of claim 4,  
wherein the configuration information specifies desired functionality for the node;  
20 wherein said automatically determining the one or more input terminals and the  
one or more output terminals for the node based on the configuration information  
comprises automatically determining the one or more input terminals and the one or more  
output terminals for the node based on the specified desired functionality for the node.

25 6. The method of claim 5,  
wherein automatically determining the one or more input terminals and the one or  
more output terminals for the node based on the specified desired functionality for the  
node comprises one or more of:

not selecting a first input terminal for inclusion in the one or more programmatically created and displayed input terminals, wherein the first input terminal is not necessary for implementing the specified desired functionality for the node;

5 not selecting a first output terminal for inclusion in the one or more programmatically created and displayed output terminals, wherein the first output terminal is not necessary for implementing the specified desired functionality for the node.

10 7. The method of claim 1,  
wherein said displaying the node in the graphical program is performed in response to user input requesting inclusion of the node in the graphical program.

15 8. The method of claim 1,  
wherein said connecting an input terminal of the node to a data source in the graphical program comprises connecting an input terminal of the node to an output terminal of another node in the graphical program;  
wherein said connecting an output terminal of the node to a data target in the graphical program comprises connecting an output terminal of the node to an input terminal of another node in the graphical program.

20 9. The method of claim 1, further comprising:  
programmatically generating graphical source code for the node to implement functionality specified by the configuration information.

25 10. The method of claim 1, further comprising:  
receiving user input requesting to provide configuration information for the node;  
displaying a graphical user interface (GUI) input panel in response to the user input requesting to provide configuration information for the node;

wherein said receiving user input specifying configuration information for the node comprises receiving user input via the GUI input panel.

11. The method of claim 1,

5 wherein said displaying the input terminals and output terminals for the node comprises displaying one or more labels for the node, wherein each label corresponds to an input terminal or output terminal;

wherein said connecting an input terminal of the node to a data source in the graphical program comprises connecting a label to the data source;

10 wherein said connecting an output terminal of the node to a data target in the graphical program comprises connecting a label to the data target.

12. The method of claim 1,

wherein the configuration information includes an alias corresponding to a first 15 input or output terminal of the node;

wherein displaying the first input or output terminal comprises displaying the alias;

20 wherein the alias visually indicates the first input or output terminal of the node such that the first input or output terminal is identifiable for connection to terminals of other nodes in the graphical program.

13. A method for displaying a graphical program including a plurality of nodes, the method comprising:

25 displaying the plurality of nodes;

for each node in the plurality of nodes, displaying one or more labels for the node, wherein each label corresponds to an input terminal or output terminal;

for at least a first subset of the plurality of nodes, displaying wires visually indicating interconnections between nodes in the first subset;

wherein each wire has a first endpoint at a label for a first node and a second endpoint at a label for a second node, wherein the first label corresponds to an output terminal of the first node and the second label corresponds to an input terminal of the second node, wherein the wire visually indicates data flow from the first node to the second node.

14. A method for configuring a node in a graphical program, the method comprising:

- 10 displaying the node in the graphical program;
- receiving user input specifying an alias for at least one input terminal or output terminal of the node;
- 15 for each input terminal or output terminal for which an alias was specified, displaying the alias in the graphical program;
- wherein the aliases visually indicate the corresponding input terminals or output terminals of the node such that the input terminals or output terminals are identifiable for connection to terminals of other nodes in the graphical program.

15. The method of claim 14,

- 20 wherein for each input terminal or output terminal for which an alias was specified, said displaying the alias in the graphical program comprises displaying a label identifying the alias in the graphical program.

16. The method of claim 14,

- 25 wherein said receiving user input specifying an alias for at least one input terminal or output terminal of the node comprises receiving user input specifying an alias for a first input terminal or output terminal having a default label;
- wherein displaying the alias for the first input terminal or output terminal comprises programmatically replacing the default label with the alias.

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17. The method of claim 14, further comprising:
  - receiving user input requesting to provide configuration information for the node;
  - displaying a graphical user interface (GUI) input panel in response to the user input requesting to provide configuration information for the node;
  - wherein said receiving user input specifying an alias for at least one input terminal or output terminal of the node comprises receiving user input via the GUI input panel.
18. The method of claim 14,
  - wherein said displaying the node in the graphical program is performed in response to user input requesting inclusion of the node in the graphical program.
19. The method of claim 14, further comprising:
  - performing at least one of:
    - connecting a first input terminal visually indicated by an alias to a data source in the graphical program, in response to user input;
    - connecting a first output terminal visually indicated by an alias to a data target in the graphical program, in response to user input.
20. A memory medium for configuring a node in a graphical program, the memory medium comprising program instructions executable to:
  - display the node in the graphical program;
  - receive user input specifying configuration information for the node;
  - programmatically create and display one or more input terminals and one or more output terminals for the node, based on the configuration information;
  - perform at least one of:
    - connecting an input terminal of the node to a data source in the graphical program, in response to user input;

connecting an output terminal of the node to a data target in the graphical program, in response to user input.

21. The memory medium of claim 10,  
5 wherein a first plurality of possible input terminals is associated with the node;  
wherein a second plurality of possible output terminals is associated with the  
node;

wherein said creating and displaying one or more input terminals for the node  
comprises creating and displaying only a subset of the first plurality of possible input  
10 terminals;

wherein said creating and displaying one or more output terminals for the node  
comprises creating and displaying only a subset of the second plurality of possible output  
terminals.

15 22. The memory medium of claim 20,  
wherein said receiving user input specifying the configuration information  
comprises receiving user input specifying:

one or more input terminals from a set of possible input terminals; and  
one or more output terminals from a set of possible output terminals;

20 wherein said programmatically creating and displaying one or more input  
terminals and one or more output terminals for the node comprises programmatically  
creating and displaying the one or more input terminals and the one or more output  
terminals specified by the user input.

25 23. The memory medium of claim 20, further comprising program instructions  
executable to:

automatically determine the one or more input terminals and the one or more  
output terminals for the node, based on the configuration information;

wherein said automatically determining the one or more input terminals for the node comprises automatically selecting the one or more input terminals from a set of possible input terminals;

5        wherein said automatically determining the one or more output terminals for the node comprises automatically selecting the one or more output terminals from a set of possible output terminals.

24.      The memory medium of claim 23,

wherein the configuration information specifies desired functionality for the node;

10        wherein said automatically determining the one or more input terminals and the one or more output terminals for the node based on the configuration information comprises automatically determining the one or more input terminals and the one or more output terminals for the node based on the specified desired functionality for the node.

15        25.      The memory medium of claim 24,

wherein automatically determining the one or more input terminals and the one or more output terminals for the node based on the specified desired functionality for the node comprises one or more of:

20        not selecting a first input terminal for inclusion in the one or more programmatically created and displayed input terminals, wherein the first input terminal is not necessary for implementing the specified desired functionality for the node;

25        not selecting a first output terminal for inclusion in the one or more programmatically created and displayed output terminals, wherein the first output terminal is not necessary for implementing the specified desired functionality for the node.

26.      The memory medium of claim 20, further comprising program instructions executable to:

programmatically generate graphical source code for the node to implement functionality specified by the configuration information.

27. The memory medium of claim 20, further comprising program instructions  
5 executable to:

receive user input requesting to provide configuration information for the node;  
display a graphical user interface (GUI) input panel in response to the user input  
requesting to provide configuration information for the node;

wherein said receiving user input specifying configuration information for the  
10 node comprises receiving user input via the GUI input panel.

28. The memory medium of claim 20,

wherein said displaying the input terminals and output terminals for the node  
comprises displaying one or more labels for the node, wherein each label corresponds to  
15 an input terminal or output terminal;

wherein said connecting an input terminal of the node to a data source in the  
graphical program comprises connecting a label to the data source;

wherein said connecting an output terminal of the node to a data target in the  
graphical program comprises connecting a label to the data target.

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29. The memory medium of claim 20,

wherein the configuration information includes an alias corresponding to a first  
input or output terminal of the node;

wherein displaying the first input or output terminal comprises displaying the  
25 alias;

wherein the alias visually indicates the first input or output terminal of the node  
such that the first input or output terminal is identifiable for connection to terminals of  
other nodes in the graphical program.

30. A memory medium for configuring a node in a graphical program, the memory medium comprising program instructions executable to:

- display the node in the graphical program;
- 5 receive user input specifying an alias for at least one input terminal or output terminal of the node;
- for each input terminal or output terminal for which an alias was specified, display the alias in the graphical program;
- wherein the aliases visually indicate the corresponding input terminals or output 10 terminals of the node such that the input terminals or output terminals are identifiable for connection to terminals of other nodes in the graphical program.

31. The memory medium of claim 30,

wherein for each input terminal or output terminal for which an alias was 15 specified, said displaying the alias in the graphical program comprises displaying a label identifying the alias in the graphical program.

32. The memory medium of claim 30,

wherein said receiving user input specifying an alias for at least one input terminal 20 or output terminal of the node comprises receiving user input specifying an alias for a first input terminal or output terminal having a default label;

wherein displaying the alias for the first input terminal or output terminal comprises programmatically replacing the default label with the alias.

25 33. The memory medium of claim 30, further comprising program instructions executable to:

- receive user input requesting to provide configuration information for the node;
- display a graphical user interface (GUI) input panel in response to the user input requesting to provide configuration information for the node;

wherein said receiving user input specifying an alias for at least one input terminal or output terminal of the node comprises receiving user input via the GUI input panel.

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